In the space at the right of each reaction place the following letters:

S (A or C)	if it is a synthesis (addition or composition) reaction
D	if it is a decomposition reaction
SD	if it is a single displacement reaction
DD	if it is a double displacement reaction

1. $2\ HgO \rightarrow 2\ Hg + O_2$ ____
2. $2\ H_2O \rightarrow 2\ H_2 + O_2$ ____
3. $Fe + S \rightarrow FeS$ ____
4. $NaOH + HCl \rightarrow NaCl + H_2O$ ____
5. $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$ ____
6. $C + O_2 \rightarrow CO_2$ ____
7. $AgNO_3 + KI \rightarrow KNO_3 + AgI$ ____
8. $3\ KOH + AlCl_3 \rightarrow Al(OH)_3 + 3\ KCl$ ____

In the space at the right of each item in column B write the letter of the item of column A that is most closely related.

Column A	Column B	
a. dissolves a substance	i) solvent	____
b. large amount of salt in small amount of water	ii) insoluble	____
c. liquid can hold no more solid	iii) saturated solution	____
d. small amount of salt in large amount of water	iv) dilute solution	____
e. substance that dissolves	v) solute	____
f. will not dissolve		

Complete the following reactions by adding in the products.

a) zinc + tin sulfate → _____

b) calcium + copper nitrate → _____

c) aluminum + sodium chloride → _____

d) sodium + magnesium fluoride → _____

Complete each of the following reactions. Be sure to balance them.

a) $Mg + H_2SO_4 \rightarrow MgSO_4 +$ _____

b) $PbCl_2 + H_2S \rightarrow PbS +$ _____

c) $Cl_2 + 2\ KBr \rightarrow$ _____ $+ Br_2\uparrow$

d) $HCl + KOH \rightarrow$ _____ + _____

Chemical Changes

Elements can combine to form compounds. Compounds can combine to form other compounds. Compounds can also be separated into the elements or the compounds from which they formed. Examine the equations below. Some represent composition reactions. Others represent decomposition reactions. In answering the questions following the equations, identify each equation below by the number at its left.

1. ___ Fe + ___ O_2 → ___ FeO
2. Ca + Cl_2 → $CaCl_2$
3. 2 H_2O → 2 H_2 + O_2
4. N_2 3 H_2 → 2 NH_3
5. ___ PbO → ___ Pb + ___ O_2
6. H_2SO_4 → H_2O + SO_2
7. 2 Na + Cl_2 → 2 NaCl
8. SO_3 + H_2O → H_2SO_4

A) The numbers of the equations for composition reactions are _____

Why are they classed as composition reactions?

_____

_____

B) The numbers of the equations for decomposition reactions are _____

Why are they classed as decomposition reactions?

_____

_____

C) Write a balanced equation for the reaction in which iron and oxygen react to form iron oxide:

_____

D) Write a balanced equation for the reaction in which lead oxide forms lead and oxygen:

_____

E) Which equations represent reactions that form chlorides? _____

What are the names of those chlorides? _____

F) Do any of the equations show two compounds combining to form another compound? If so, which one? _____

G) Do any of the equations show a compound breaking apart to form other compounds? If so, which one? _____

Types of Reactions Worksheet

Balance the following equations and indicate the type of reaction taking place:

1) ____ $NaBr$ + ____ H_3PO_4 → ____ Na_3PO_4 + ____ HBr

Type of reaction: _____

2) ____ $Ca(OH)_2$ + ____ $Al_2(SO_4)_3$ → ____ $CaSO_4$ + ____ $Al(OH)_3$

Type of reaction: _____

3) ____ Mg + ____ Fe_2O_3 → ____ Fe + ____ MgO

Type of reaction: _____

4) ____ C_2H_4 + ____ O_2 → ____ CO_2 + ____ H_2O

Type of reaction: _____

5) ____ $PbSO_4$ → ____ $PbSO_3$ + ____ O_2

Type of reaction: _____

6) ____ NH_3 + ____ I_2 → ____ N_2I_6 + ____ H_2

Type of reaction: _____

7) ____ H_2O + ____ SO_3 → ____ H_2SO_4

Type of reaction: _____

8) ____ H_2SO_4 + ____ NH_4OH → ____ H_2O + ____ $(NH_4)_2SO_4$

Type of reaction: _____

Types of Reactions Worksheet – Solutions

Balance the following equations and indicate the type of reaction taking place:

1) **3** $NaBr$ + **1** H_3PO_4 → **1** Na_3PO_4 + **3** HBr

Type of reaction: **double displacement**

2) **3** $Ca(OH)_2$ + **1** $Al_2(SO_4)_3$ → **3** $CaSO_4$ + **2** $Al(OH)_3$

Type of reaction: **double displacement**

3) **3** Mg + **1** Fe_2O_3 → **2** Fe + **3** MgO

Type of reaction: **single displacement**

4) **1** C_2H_4 + **3** O_2 → **2** CO_2 + **2** H_2O

Type of reaction: **combustion**

5) **2** $PbSO_4$ → **2** $PbSO_3$ + **1** O_2

Type of reaction: **decomposition**

6) **2** NH_3 + **3** I_2 → **1** N_2I_6 + **3** H_2

Type of reaction: **double displacement**

7) **1** H_2O + **1** SO_3 → **1** H_2SO_4

Type of reaction: **decomposition**

8) **1** H_2SO_4 + **2** NH_4OH → **2** H_2O + **1** $(NH_4)_2SO_4$

Type of reaction: **acid-base**